

Claims

1. A package for substances or mixtures of substances, characterized in that the package contains an optically sensitive element.
2. The package according to claim 1, characterized in that a sensitive membrane or layer is present on the sensitive element or is the sensitive element.
3. The package according to claim 1 or 2, characterized in that the membrane or layer is subject to specific layer thickness changes, scattered light changes, changes of optical refractive index, spectral changes.
4. The package according to any of the previous claims, characterized in that the layer thickness changes can be measured by the method of interferometry, surface plasmon resonance, spectroscopy.
5. The package according to any of the previous claims, characterized in that the layer thickness change is effected dependently on concentration, i.e. the oxygen concentration, hydrocarbon concentration, hydrogen concentration, H₂O content, or dependently on temperature or pressure.
6. The package according to any of the previous claims, characterized in that the membrane or layer contains one or more dyes or selective markers.
7. The package according to any of the previous claims, characterized in that state changes within the package are detectable by surface plasmon resonance, spectroscopy or luminescence changes on membrane or layer.
8. The package according to any of the previous claims, characterized in that a marker or dye is changeable dependently on concentration (pH, O₂) or dependently on temperature or pressure.
9. The package according to any of the previous claims, characterized in that detection is effected through the package without damaging the same.

10. The package according to any of the previous claims, characterized in that the membrane or layer is applied directly to the inner side of the package.
11. The package according to any of the previous claims, characterized in that the membrane or layer is fixed to an adhesive film adapted to be bonded into the package.
12. The package according to any of the previous claims, characterized in that the membrane or layer is connected to the package on/in a transparent element which is also fixable in a frame.
13. The package according to any of the previous claims, characterized in that the sensitive element is inserted into the package.
14. The package according to any of the previous claims, characterized in that a calibration of the sensitive layer or membrane can be effected upon closing by vacuum or excess pressure, supply of gas, supply of calibrating liquid and/or temperature variation.
15. The package according to any of the previous claims, characterized in that a calibration can be effected by external calibration before incorporation into the package.
16. The package according to any of the previous claims, characterized in that an external calibrating module is adapted to be calibrated by pressure changes.
17. The package according to any of the previous claims, characterized in that a sensitive membrane or layer has optical, mechanical and/or chemical protective layer(s) applied thereto.
18. The package according to any of the previous claims, characterized in that protective layer(s) are formed of permeable metal, dielectric, PTFE or PTFE-based layers.

19. The package according to any of the previous claims, characterized in that protective layer(s) are formed of reflective and/or absorbent lacquer layers, in particular based on synthetic resins and/or acrylic.
20. The package according to any of the previous claims, characterized in that the package is transparent to electromagnetic waves or has a window transparent to electromagnetic waves.
21. The package according to any of the previous claims, characterized in that a membrane/layer indicates a fault or leak by color change without additional measuring technology.
22. The package according to any of the previous claims, characterized in that the sensitive element can detect multiparameters.
23. The package according to claim 22, characterized in that the multiparameters are dependent on concentration, pressure, moisture or temperature.
24. The package according to any of the previous claims, characterized in that a sensitive membrane or layer has at least one piece of information applied thereto.
25. The package according to any of the previous claims, characterized in that a sensitive membrane or layer has at least one radio frequency identification (RFI) chip applied thereto/thereon.
26. The package according to claim 25, characterized in that information is stored and retrievable by electromagnetic waves in the RFI.
27. The package according to either of claims 24/25, characterized in that the information comprises calibrating data, batch information and identifications.
28. The package according to any of the previous claims, characterized in that the membrane/layer has a signal evaluation unit present thereon.

29. The package according to claim 28, characterized in that measuring data, control messages are transferable by means of electromagnetic waves and/or and the energy supply is thus effected.